

Domains in a Metal Oxide Matrix**Abstract**

Composite powder with a matrix domain structure, in which

- the matrix is a metal oxide and is present in the form of three-dimensional aggregates that have at least in one dimension a diameter of not more than 250 nm,
- the domains consist of metal oxides and/or noble metals in the matrix of an individual metal oxide, wherein the domains consist of
 - at least two metal oxides or
 - at least two noble metals or
 - a mixture of at least one metal oxide and at least one noble metal, and
 - are nanoscale, and in which

the composite powder has a volume-specific surface of 60 to 1200 m²/cm³. The composite powder is produced by mixing the precursors of the oxides of the matrix and of the domains, corresponding to the subsequently desired ratio, with a gas mixture containing a combustible gas and oxygen and are reacted in a reactor consisting of a combustion zone and a reaction zone, and the hot gases and the solid products are cooled and then separated from the gases. It may be used as material for magnetic, electronic or optical applications.